9

TWO LECTURES
ON THE
APPLICATION
OF
THE STETHOSCOPE
TO THE
DIAGNOSIS AND TREATMENT
OF
THORACIC DISEASE.

BY
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THESE LECTURES

ARE DEDICATED TO THE

CLASS OF THE MEATH HOSPITAL,

BY THEIR OBEDIENT SERVANT,

WILLIAM STOKES.

TWO LECTURES,

&c. &c.

Gentlemen,

We are now to commence the study of an highly important class of diseases, namely, those affecting the organs of respiration; a class of affections, in many points of view, possessed of the highest interest; frequent in their occurrence—dangerous in their consequences—of an alarming number—presenting infinite complications, arising from various causes, and producing the most remarkable and interesting effects on the animal economy. These circumstances alone would in themselves be sufficient to stimulate the mind to enter on their investigation. But the study has other attractions besides that of difficulty; in it we shall be struck with accuracy of description and beauty of arrangement, far beyond that which has been introduced into the other parts of the study of medicine. We shall further be made acquainted with methods of diagnosis in their nature mechanical, and hence susceptible of a greater degree of certainty than those founded on what are termed "symptoms." A symptom or circumstance, either produced by, or generally accompanying particular states of parts, is almost never precisely the same in two individuals affected with similar disease: the causes of variation are numerous, age, sex, constitution, intensity, or complication of disease, all these obscure it, and diminish its diagnostic value. In fact it is a vital phenomenon, and hence liable to considerable uncertainty; while the purely mechanical phenomena (though in some cases doubtful) must, from their very nature, be attended with much greater certainty.

Some of you may conceive, as the diseases of the chest have been termed *medical diseases*, that you, as surgical students, are not called upon to study them. If there are any of you who hold such opinions, let me intreat of you to reflect a little upon them. The line of distinction in the study of the two professions is now looked on by the liberal and enlightened, as calculated to serve neither, and to injure both. The healing art, Gentlemen, is one,—a sick man is equally a subject for medical skill, be he labouring under a fractured leg or inflamed liver; and you will find, upon investigation, that the same principles direct the treatment in either case. But the subject is now getting trite, and I shall merely insist on the great necessity of your studying thoracic disease, by reminding you, that such of you as may hereafter enter into the army will have, every day of your practice, to meet with and combat pulmonary diseases. The exposures of a campaign predispose the soldier in a particular manner to such affections; and the feelings of a surgeon, surrounded by the dying, the nature of whose diseases he does not understand, and consequently, whom he is unable to cure, are surely not to be envied. The principles now laid down are so evident, that it seems almost unnecessary even to allude to them; but I thought it better to do so, for notwithstanding the light of improving science, some are still found in both professions who will advocate the necessity of their separate study, which is tantamount to advocating the necessity of ignorance—the utility of darkness.

It is my intention in the following lecture to bring forward facts in proof of assertion. I have stated, that pulmonary disease is of extraordinary frequency; this can be proved by reference to documents easily within your reach.

Anxious to obtain an average of the frequency of thoracic disease in this hospital, I took up the books of February and March, 1826, and found that in that time forty cases were under treatment in the chronic medical wards; of these, twenty were cases of pulmonary disease.

In *Edinburgh*, as stated by Dr. Alison, in his paper on Scrofulous Affections, one-third of the deaths in the practice of the New Town Dispensary occur from thoracic disease.

In France also, we find diseases of the chest occurring with alarming frequency. Sauvage mentioned that at the hospital of Nismes, one-tenth of the cases admitted were of pleurisy and pneumonia alone, exclusive of all the other numerous classes of pulmonary affections.

In Paris the number of deaths in the year 1826 was 25,898; of these the following were cases of thoracic disease: croup, 282; measles, 408; morbus cordis, 877; pneumonia, 1386; catarrh, 2005; phthisis, 3135; in all, 8093; or more than a third of the whole number.

In other countries, also, the proportion is remarkable; thus, in the year 1824, the deaths in Philadelphia were 4399; of these the following were cases of disease of the chest: morbus cordis, 6; asthma, 7; hydrothorax, 29; pleuritis, 27; bronchitis, 63; pneumonia, 151; phthisis, 576; in all, 859; or about one-fifth of the whole number.

In the same year the deaths in New York were, 4341; of these the following were from pulmonary disease: asthma, 5; hæmoptysis, 8; catarrh, 19; hydrothorax, 44; hooping-cough, 116; pneumonia, 205; phthisis, 736; in all, 1233, which is more than a fourth of the whole number. Now it is not unlikely but that some of these cases may have been mistaken as to their particular nature, but that they were all cases of pulmonary disease is tolerably certain.

Many other statements might be brought forward in support of my assertion, but it is quite unnecessary to do so. The great frequency of thoracic disease must be so obvious, that to insist on it further, appears uncalled for.

Having premised these observations, I shall proceed to the subject of this lecture; namely the *Stethoscope,* and its application to the diagnosis of the different diseases of the chest. I shall not take up your time by entering into the history of its discovery, neither do I think it necessary to refute the attempts at objections which have been raised to its use. I shall bring forward evidence to prove its extraordinary utility as an assistant in diagnosis; and, I need not remind the Class of the Meath Hospital, that an accurate diagnosis, is the only sure ground of judicious treatment. What, I would inquire, is the end of all medical study? For what purpose does the ardent physician or surgeon labour day after day in the hospital, the dissecting-room, or the closet? The answer is plain, that he may learn to cure or alleviate disease. What is the first step in the attempt to cure disease? It is to distinguish it; it is to recognize it, obscured as it may be by a host of adventitious circumstances. This is in fact the great object of study. Diagnosis then is a paramount object, and we should, in the true spirit of philosophy, receive with thankfulness and avidity every thing that can tend to remove its difficulties.

Now it may be stated generally, that diagnosis of disease is drawn from two sources; the one, the evidence of our senses, such as sight and touch. Thus the experienced surgeon can recognize many affections at a single glance: affections of the eye, of the external part of the body, such as diseases of the skin, &c. He can tell at once the nature of particular kinds of sores, and so on. By the touch he can recognize many affections more deeply seated, such as aneurism, abscess, dropsy, and other diseases. This then is one and the simplest source of diagnosis; the other is of a more complicated and difficult nature, and is applied to diseases of parts hidden from our view, and not perceptible to our touch. Symptoms, as they are termed, or alterations of function of various organs of the body, particular situations of pain, particular kinds of pain, particular appearances of secretions, &c., are the sources of diagnosis in these cases. It is plain that the diagnosis in the first case is drawn from the visible or tangible alteration from the healthy state, while in the second it consists in a process of reasoning, by which, from an extensive induction, we are enabled to connect external symptoms with the state of internal parts.

We have seen that the evidence drawn from the external symptoms, and the visible or tangible alterations of structure, formed the basis of diagnosis in all diseases. But a new source of knowledge has been lately added; the sense of *hearing* has been called to our assistance, and has, I will affirm, added more to the facility, certainty, and utility of diagnosis, than any thing which has been done for centuries. By the Stethoscope we are enabled to unite the evidence drawn from physical phenomena, with that afforded by the obscure manifestations of nature. By it we substitute the ear for the eye, penetrate into the mysteries of hidden disease, and throw light on a class of affections, perhaps more important than most of those to which the human frame is liable.

The principle by which the Stethoscope assists us in detecting the state of the thoracic viscera, can be explained in a very few words. The air, as it passes through the lungs in the acts of inspiration and expiration, the sound of the voice in different parts of the chest, and the impulse and sound of the heart, at each pulsation, have all certain characters in the state of health. They present phenomena which are to be considered as standards of comparison. Now every disease of the lungs and heart alters or modifies these phenomena in a particular, and, generally speaking, constant manner, according as the case may be; and it is by the knowledge of the morbid phenomena, or deviations from the natural state, that we can judge of the nature of the disease.

In advocating the employment of the Stethoscope, I shall first speak of its utility (in a practical point of view) in the treatment of those diseases of the chest, which can be recognized in most instances by external symptoms alone. I shall next show its application to the discovery of the latent diseases of the lungs, a class of affections which cannot be known but by the employment of this instrument; then allude to its use in the incurable diseases of the thorax; and lastly, speak of some of its minor applications.

PNEUMONIA.

I shall begin with the inflammatory affections of the lungs.

Pneumonia has been long described, and its symptoms given in all the books on the Practice of Medicine, from Hippocrates downwards. We shall find, however, that these symptoms are by no means so constant as at first we should be led to believe; but at present, I shall assume, for the sake of argument, that every case of inflammation of the lung, can be recognized by external symptoms. Of what value, then, it may be asked, is the Stethoscope in such a case? Now to answer this question fully, I must premise some observations on the disease in question.

Inflammation of the pulmonary tissue has been divided into three stages by the best and latest authors. The first, *active sanguineous congestion*, by which is meant, that the quantity of blood in the organ is greater than natural, and that this state is accompanied by what may be termed the inflammatory stimulus. In this state the texture of the lung is not perceptibly altered, for if a patient dies at this stage of the disease, we find that by the processes of washing and pressure, we can reduce the lung to its natural appearance. The second stage is solidification, or what is termed *hepatization*, a state induced by the deposit of coagulable lymph into the substance of the lung. The third stage is that of commencing interstitial suppuration, in which we find the lung again becoming permeable, but every where infiltrated with pus. These are the three stages of pneumonic inflammation. Now the Stethoscopic sign of the first stage is what is termed the crepitus, or crepitating rale. It is the pathognomonic sign of pulmonary inflammation in the first degree; it must be always present; it is a never-failing indication of this state of parts. Now it must be obvious to you all, that such being the case, we can at once tell *the exact extent of the disease, whether one or both lungs are engaged, the precise situation of the morbid action—its intensity.*

Now here is a quantity of exact and certain information obtained, which, *I contend*, can never be arrived at by merely studying the external symptoms. We may recognize an inflammation of the lung, but where is *one* of the opposers of the Stethoscope that could tell which, and how many lobes of a lung are engaged, or whether the intensity of the disease is exactly proportioned to the violence of the external symptoms. There is not *one* could do so. But they will demand, "What is the use of this knowledge?" I answer, that to the scientific physician, to the man who is desirous of treating his patient on sound principles, and of throwing uncertain and empirical practice overboard, the information is invaluable, as we shall presently prove.

Now, as to the second stage of inflammation, or that of solidification. Here the lung becomes impermeable to air, the crepitus ceases, and as far as the passage of air through the cells of the lung is concerned, nothing whatever is to be heard. By this we know when any part of the lung has become hepatized; we can trace the progress of this morbid change, ascertain its exact extent, and modify our practice accordingly. I would ask those who affect to despise the Stethoscope, whether they can, by any sign whatever, tell when hepatization has taken place; they may guess at it, but we are certain of it. They have only the uncertain evidence of symptoms, which any one who has studied thoracic disease must know to be highly fallacious. We, on the contrary, have proof positive—demonstrative certainty.

In the third stage the Stethoscope also assists us in detecting the obscure processes of nature. We find, that that portion of the lung before solid becomes permeable, and we see, at the same time, that the external symptoms are not those of resolution. By the combination then of these circumstances we recognize the state of parts. Thus we are enabled to follow the disease through all its stages, to know what takes place every hour with almost as much certainty as if the thorax was laid open, and the diseased parts exposed to our view. But this is not all : we can know by Stethoscopic examination the commencement and progress of the resolution of the inflammatory action. This can be known from the first hour of its occurrence, *and at a time when there may be no alteration in the external symptoms*, as I have often seen in this hospital. I have seen, more than once, patients in whom every day I was able to declare that resolution was going forward, although the symptoms continued with such severity as would have led me at least to pronounce unfavourably on the case, had I not daily used the Stethoscope.

In speaking of pneumonia I shall allude but to two more instances where the Stethoscope gives information of the highest practical utility. The first is, that we can tell, with the greatest accuracy, the effect of our remedies on the disease, and be thus guided in their *repetition*, *increase*, or *diminution*. In the course of a few hours I have often found that I could detect the precise amount of alteration which the parts had undergone while the patient was under the influence of remedial measures, in a manner far more exact than could be ascertained by the study of the external symptoms, when these did present any change; *but,* as I have before stated, the most beneficial changes may take place in the diseased organ, although the alteration of external symptoms shall not be perceptible. This may be attributed to the high degree of nervous excitement and vascular action under which such patients often labour.

The next practical benefit, which we derive from the use of the Stethoscope in pneumonia, is one, which, from its very nature, cannot be attainable by those who do not use this instrument. It is derived from a most interesting pathological fact, which would never have been discovered but for the application of the Stethoscope. We find in cases of pneumonia, which have apparently recovered, when the cough, dyspnœa, and fever have disappeared, that still a crepitus may be detected by the Stethoscope in the affected part, a proof that a lurking latent inflammation still remains. So long as this continues, we refrain from pronouncing our patient out of danger, for we know, that a slight exciting cause, will, as it were, light up this slow and latent disease into a violent and manifest attack. Now in such cases, observe the advantages which the Stethoscopist possesses. He alone can detect this state of parts, and while it exists, use well directed measures towards its cure. The physician, ignorant of auscultation, must be deceived in such a case; he must be necessarily deceived, for he has no lights to guide him; his favourite symptoms are all absent, his patient appears well, and he leaves him with the conviction that he has cured the disease; while in point of fact, what is the state of his patient? He has a latent inflammatory action, discoverable by the Stethoscope, and by the

Stethoscope alone; which may on the slightest excitement assume its former intensity, and expose his weakened constitution to the dangers of a relapse.

It is almost unnecessary for me to draw your attention to the importance of this instrument in forming our prognosis in such cases. By it we can tell the state of parts of the lung not immediately engaged in the recent attack; we can tell whether any part of the lung has been the seat of chronic inflammation; whether the pleuræ are engaged; can ascertain the state of the bronchial mucous membrane. In most cases, also, determine as to whether disease of the heart is or is not present, and by weighing all these circumstances, we shall form a prognosis which can hardly be wrong.

PLEURITIS.

I shall next speak of what is termed pleuritis, or inflammation of the pleura. In this affection, the Stethoscope gives us the most useful and satisfactory information. You are all aware that in pleurisy, the effect of the disease, is first to cause the throwing out of a quantity of exudation into the bag of the pleura; this is generally composed of two ingredients, *serum* and *albuminous lymph*, the relative proportions of which vary according to circumstances. By the Stethoscope we are enabled to detect the first appearance of this exudation, which is shewn by the occurrence of two remarkable phenomena; the one, the diminution of respiration in the affected part; the other, a peculiar and very remarkable sound of the voice, called egophonia, from its resemblance to the voice of a goat. The diminution of respiration in this case, coming on *without* the Stethoscopic signs of pneumonia, is quite pathognomonic of pleuritic effusion. Now I would ask, by what external symptoms could we take upon ourselves to say, that copious effusion had taken place into the pleura, so soon as a few hours from the commencement of the attack? We have no means of doing it, but by the *Stethoscope.* Again, the Stethoscopist can tell every hour whether the effusion is on the increase, whether it is stationary, or diminishing. I would ask the opposers of the Stethoscope, can any of them by the observations of external symptoms, arrive at this accuracy of knowledge?

By the Stethoscope we are able to diagnosticate pleuritis from pleurodyne, or rheumatic inflammation of the intercostal muscles, with greater care and certainty than can be obtained without its use. It may be said, that he must be ignorant indeed who could confound them; but the fact is, that they have been confounded, and this mistake has, to my knowledge, been attended with fatal consequences, of which the following is an instance:

A gentleman had complained for some months of a pain in the left side, extending to the shoulder; he was attended by two physicians of eminence, who considered the case as rheumatism, and treated it accordingly. After some time his heart was observed to palpitate strongly, and it was found that it could be distinctly felt in the epigastrium. These circumstances appeared to warrant the conclusion that the heart had become diseased, and the patient was informed of the opinion of his physicians. At this time he was examined by a gentleman versed in the use of the Stethoscope, who at once detected a copious effusion into the pleura of the left side, which had, in fact, caused the displacement of the heart. An operation was proposed and performed; and a vast quantity of sero-purulent matter given exit to. But in this case the discovery of the disease came too late, and the patient sunk, although he had been treated from the first according to his external symptoms.

There is another case which, I am persuaded, occurs oftener than might be supposed. A patient had all the apparent symptoms of an enlarged state of the liver, which could be felt protruding a considerable distance below the margin of the ribs. He had a slight cough, but as this occurs often in cases of hepatic disease, it was paid no attention to. Leeching, cupping, blistering, the tartar emetic ointment, were alternately and diligently used for some time, but as the liver obstinately refused to grow smaller, mercury was resorted to, and after a full course of this mineral, the patient was put through a course of nitric acid. As might be expected, he sunk under these curative efforts; and upon dissection it was found that the liver was not diseased, but merely displaced by an empyema of long standing, the existence of which had been wholly overlooked. Gentlemen, this case speaks for itself. But observe the practical irresistible conclusion. The case was one of obscurity,—to whom? to those who affected to say that external symptoms are to be the sole guide in practice. Had the Stethoscope been used, the life of this unfortunate patient would, in all probability, have been saved.

When speaking of the surgical application of the Stethoscope, I shall recur to this subject.

BRONCHITIS.

Bronchitis, or inflammation of the bronchial mucous membrane, is the next disease to which I shall call your attention. Of this affection there are several varieties, differing in their nature and treatment. The Stethoscopic phenomena of these varieties are different, and are, of all the others, those which are most easily appreciable to the tyro in auscultation. In acute bronchitis, or catarrh, as it is termed, the minute ramifications of the air passages become, to a certain degree, obstructed by the turgescence of their mucous lining. In consequence of this state their calibre is diminished, and the air experiences greater resistance in its passage during the acts of inspiration and expiration. In place of the natural murmur, a cooing sound is distinctly audible in every portion of the chest where the mucous inflammation exists. The intensity of this sound is, like the crepitus in pneumonia, proportional to the violence of the inflammation. Now the same observations, as to practical utility, apply to this phenomenon as to the crepitating rale in pneumonia, and the absence of respiration, and the egophonia in pleuritis. By it we can know with accuracy the *seat*, *extent*, and *violence* of the inflammation, tell the effect of remedies, and so on.

I have seen many cases of what I will take upon me to say, would be termed pneumonia by the great majority of practitioners, in which there was high fever, deep-seated pain, cough, and the other symptoms of pneumonia; yet by the Stethoscope I have satisfied myself that the disease was nothing but acute bronchitis; and it is unnecessary to add, that this conclusion was of no small importance in the prognosis and treatment of the case.

There is a case at present in our wards which illustrates the practical utility of the Stethoscope in the treatment of bronchitis. The patient was admitted labouring under the symptoms, and presenting the stethoscopic phenomena of acute bronchitis; for this he was treated by venesection, and the use of the tartar emetic in large doses. Under this treatment the disease yielded to a certain degree. When I saw him first he was labouring under hurried respiration and cough, with mucous expectoration; his countenance was livid; he had some pain in the chest. On applying the Stethoscope I found that the sonorous rale, or sound pathognomonic of acute bronchitis, was absent; but that the *mucous* rale, or that phenomenon which attends the chronic stage, was pretty generally present. I immediately ordered the plan of treatment to be changed; the stimulating and tonic plan was resorted to, and with the most marked success. For two or three days after the commencement of this treatment, the patient had all the appearance of a person falling rapidly into consumption; he had cough, muco-puriform expectoration; he was pale, lost flesh, and had some tendency to night perspirations. Yet by the daily application of the cylinder I was satisfied that such was not the case, as the phenomena of this state were wholly wanting.

I bring forward this case as showing two important practical applications of the Stethoscope.

First, as showing the passage of the disease from the acute to the chronic stage; a change which calls for a complete alteration in the plan of treatment. You are all aware that the treatment of the acute diseases of the internal and external cutaneous system, or in other words, of the mucous membranes internally, and the skin externally, consists in the adoption of the antiphlogistic plan. Every thing that can reduce the arterial plethora, and tend to deplete the affected parts, must be vigorously had recourse to. But the principles of treatment in the chronic affections of these tissues are totally different; in such cases the tonic and stimulant plan must be cautiously used. It is then manifest, that to be able to tell with precision the time when the one mode of treatment is to be abandoned, and the other adopted, must be of the highest importance. I do not mean to say that without the Stethoscope we could not, in any case, be able to ascertain this point; but I do contend, that with its assistance we can ascertain it *sooner*, and with much greater accuracy.

The second application of the Stethoscope in such a case, is, if possible, more important, as it give us the means of arriving at a knowledge unattainable without its use. Here we see a patient, after having undergone an acute attack of bronchitis, becoming affected with symptoms of phthisis; his expectoration is puriform, he is pale and emaciated; hectic fever is beginning to develope itself. It is idle to say, that the physician, trusting to external symptoms alone, could affirm that such a patient had not consumption. He would have no right or reason to do so, for his patient has every symptom of the disease. He would be reduced to the following dilemma:—If he asserted that the patient had phthisis, he would be wrong; if he maintained that he had not, he could not prove his opinion.

While speaking of bronchitis, I shall allude to the exanthematous diseases, a class of affections intimately connected with inflammation of the bronchial mucous membrane. This is a fact observed by Avenbrugger. Measles and scarlatina are generally preceded by symptoms of bronchial inflammation. "The disease," says Dr. Willan, "during this period," (meaning the time before the eruption in measles takes place,) "and usually for two or three days longer, is accom-
"panied with a frequent, hard, and dry cough, hoarse-
"ness, difficulty of breathing, and a sensation of con-
"striction across the chest. In children a harsh
"sounding cough often occurs, seven, ten, fifteen, or
"twenty days before the disease formally com-
"mences."

To quote again from Dr. Willan: "In many per-
"sons the cough soon after the disappearance of the
"rash recommences with violence, being attended
"with difficulty of breathing, fixed pain of the side,
"flushing of the cheeks, and often with paroxysms,
"as in hectic. This state lasts much longer than
"pneumonic inflammation produced by cold, and

" more frequently terminates by effusion into the " cavity of the chest, spitting of blood, suppuration, " and confirmed pulmonary consumption."

These statements are founded in observation, and must be familiar to every one who has studied the disease in question. We might consider measles and scarlatina only as peculiar forms of bronchitis attended with a cutaneous eruption, which certainly appears to be an effort of nature to relieve the internal parts. The remarkable observation of Avenbrugger tends to strengthen this idea, and goes to prove the great relation which exists between the skin and pulmonary organs in these cases. He found, during the period of the disease antecedent to the eruption, that the chest sounded dull on percussion, showing that it was more or less obstructed; that when the eruption took place, the chest became clear, but that if the eruption was by any accident repressed, the chest would again become dull.

It is obvious to you all, that in the treatment of such diseases, an exact knowledge of the state of the lungs must be of no small importance. This we can arrive at sooner, and with greater accuracy, by the use of the Stethoscope. The proposition is simply this, The nidus of these diseases appears to be situated in the lungs; it is either useful to know accurately the state of the lung in such diseases, or it is not useful. If it be useful, then the Stethoscope must be of advantage, for even its most obstinate opposers cannot deny its utility in diagnosis.

The last affection of the bronchial mucous membrane to which I shall allude, is *croup.* This you know is an inflammation of the lining membrane of the larynx and trachea, accompanied by a copious exudation of coagulable lymph on its surface. It is a disease easily recognized by the external symptoms; but the advantage of the Stethoscope in such cases, is derived from the information which it gives us of the state of the lungs. This is useful in guiding our treatment and in forming our prognosis. The operation of tracheotomy in the croup of children, is now discouraged by the best informed surgeons: still, a case may occur where it will be thought advisable. In such a case, of what value must the Stethoscope be. From the disease in the larynx, it is quite impossible to judge of the state of the lungs, for there will be cough, difficulty of breathing, lividity of the face, and other symptoms; and where is the man trusting to external symptoms, who could affirm that the disease had not affected parts below the portion of the trachea, in which an opening could be made? Now by the Stethoscope *this can be done.* Again, a great number of cases of croup are attended with general bronchitis, or even pneumonia; is the knowledge of these facts, which I contend can be only guessed at without the use of the Stethoscope, of no value?

Before I speak of the latent affections of the lung, I shall allude to an application of the Stethoscope, as important, perhaps, as any of those I have described. Every one has heard of *hydrothorax,* or *water on the chest.* The disease and its symptoms have been described in the different works on the Practice of Medicine; nay further, books by grave and learned men have been written on this disease; cases have been detailed, and dogmata inculcated. Corvisart was the first who showed that idiopathic hydrothorax was a disease of extreme rarity, and that when serum was found in quantity in the cavities of the pleura, we should not consider its accumulation as a disease, but rather as the consequence of some antecedent affection of the lungs or heart. The immortal Laennec has further established this proposition, and has proved to demonstration, that hydrothorax can scarcely ever be considered as a primary disease.

It is as amusing as it is extraordinary, to find, that even now, when so many years have elapsed since the publication of the work of Corvisart, many medical men are to be found who would consider this statement as absurd, who still continue to be guided, or rather misguided, by the writings of Cullen and Maclean, who consider every case of cough, difficulty of breathing, lividity of the face, orthopnœa, scanty urine, and swollen extremities, as hydrothorax, when, in fact, a moment's application of the Stethoscope would show that they were mistaken.

Many of these cases, as has been stated in the Report of the Hospital by Dr. Graves and myself, have been sent into us as cases of hydrothorax, but in no *one* instance have we found this statement correct. Many of them we might, indeed, state, had serous effusion in every part of their body, save and except in the cavities of the pleuræ. Some of these cases were instances of chronic bronchitis, terminating in that dilated state of the pulmonary cells, called emphysema by Laennec; others were cases of this affection, complicated with disease of the heart; but the great majority were cases of chronic pneumonia, mistaken and maltreated from the very commencement; mistaken in consequence of men adhering to the definitions of the older writers, and maltreated by their trusting to the diuretic plan, and neglecting to overcome the disease in the first instance. By the Stethescope such cases can at once be detected, and distinguished from hydrothorax. As I stated in the former part of this lecture, whenever effusion takes place into the cavity of the pleura, the sound of respiration becomes diminished, and ultimately ceases in the affected part.

We have had many patients in whom, after death, a large quantity of fluid was found in the cavities of the pleura; yet we know by the Stethoscope that this effusion did not take place until within a few hours of the fatal event. The patients died with hydrothorax, but not of it. This important fact, discovered by means of the Stethoscope, has thrown a new light on such cases, and has enabled the physician to save life, where, without this knowledge, it would be inevitably lost.

Observe now what an important error you may fall into by trusting to the descriptions given by the older writers. You get a patient with dyspnœa and orthopnœa, swelled legs, scanty urine, and every other symptom of hydrothorax, according to Maclean, Cullen, and Good, and you commence giving him squills, nitrous ether, and digitalis, and your patient gets worse and worse, till at length you apply the Stethoscope, and find that there is no hydrothorax at all, the disease being, in fact, pneumonia, and calling for the employment of the lancet and other antiphlogistic means. These, Gentlemen, are undeniable truths, which many of you must have seen exemplified again and again in our wards. Many of the cases recorded by Maclean are nothing but chronic pneumonia, proved, in fact, by his own dissections.

Gentlemen, the subject is so extensive, that I must reserve the remaining considerations until Tuesday. We shall then speak of the latent diseases of the chest, of the application of the Stethoscope to the treatment of fever, of its use in the incurable diseases of the lungs and heart, and lastly, of its surgical applications. I shall then hope to have laid before you such a body of evidence as will, I think, enable such of you as have attended to the subject to defend the use of this instrument upon sound argument. It has been bitterly opposed, but so has every truth introduced into the world; and this very opposition is to be rejoiced at, rather than deplored, for it excites to the examination of a subject which will stand the test.

SECOND LECTURE.

We now come to consider the latent diseases of the lungs, or those which do not present the usual external symptoms of the different thoracic affections. Here are a numerous class of diseases, each of them going through its different stages, and either destitute of external symptoms, or presenting such phenomena as must mislead the practitioner ignorant of the Stethoscope. Here are a numerous class of diseases, whose existence may have been suspected from the examination of dead bodies, but whose nature and presence during life have been discovered solely by the Stethoscope. What, I would ask, would those, who affirm that by external symptoms they can discover all diseases of the chest, make of the following case? A man shall become drowsy, with a sense of weight in the head; these symptoms shall continue for three days, when he shall have nausea, followed by violent vomiting, tenderness of the epigastrium; his *respiration not hurried, no cough or pain of chest.* As his disease advances, he shall have a swelled and hard abdomen, red tongue, frequent alvine evacuations, with some cough, but without pain of chest. The abdominal symptoms shall increase until the fatal termination of the case. Would not they say, that this was a case of abdominal inflammation? and yet what is the result of the dissection?—the abdominal viscera are all healthy, but the lungs are extensively diseased, the right lung universally hepatized, passing in some portions into suppuration; sero-purulent effusion into the cavity of the pleura; the left lung hepatized in its inferior portion. This, Gentlemen, is a genuine case; it formed the subject of a thesis by Lenormand, and was not mistaken by him, for he used the Stethoscope, and pointed out the progress of the disease from day to day.

I knew the case of a woman who never presented any external symptom by which pulmonary disease could be suspected. She was treated by an hospital physician for scirrhous pylorus, but upon dissection the stomach was found healthy, the right lung completely hepatized. She died, in fact, of chronic latent pneumonia.

I have the notes of another case also of a female who was treated for some time for symptoms of digestive derangement. Her case appeared obscure, so that I paid more than usual attention to it. She had a slight cough, which led me to examine her chest with the Stethoscope, when I detected a latent pneumonia of the whole of the lower lobe of the right lung. Next day nature appeared to make an attempt towards a crisis, the woman was bathed in perspiration. But what was the treatment?—sulphuric acid was exhibited in considerable quantity to check this perspiration, and the next day the pneumonia was very evident from its external symptoms.

It appears at first sight extraordinary, that inflammation could affect an organ of such importance to the system as the lung, without exciting such symptoms as would at once lead to its detection. This, indeed, has been the opinion for a long time, but the study of nature forces us continually to abandon the notions which we have formed from theory. We see from morbid dissections, that inflammation may affect the lung extensively, although during life no external symptoms, sufficient to reveal this state, were present. We find that every part of the lung may be thus engaged,—the mucous membrane of the bronchial tubes,—the cellular tissue, and the serous covering. Why the disease should be latent in one case, and not so in another, we have at present no means of determining; in all probability it depends on some peculiar state of the nervous system. But the fact is so; it is now as completely established as any other truth in the study of medicine.

Pneumonia may be latent under a variety of circumstances. First, from being obscured by other diseases of the chest, such as bronchitis, and diseases of the heart. It sometimes accompanies that state of the lung termed the hæmoptysical engorgement. In this affection blood is thrown out into the substance of the lung, which hence becomes solid, and impermeable to air. Now it often happens that around these masses of solidified pulmonary tissue we can detect the crepitating rale, showing that inflammation is going on. Of this we had a good instance lately in our wards,—the case must be familiar to many of you.

Pneumonia often occurs in subjects affected with phthisis, and in these cases, as we have seen in this hospital, is sometimes remarkably obscure. In a case of a man lately discharged, the crepitating rale was distinctly audible over the superior portion of the right lung, which I believe to have been tubercular. Notwithstanding this extensive inflammation his pulse was ranging between forty and fifty in the minute, and was remarkably weak. In this man also, shortly before his dismissal, the part of the lung engaged had become nearly solid, and yet his external appearance was so much improved, as to have led any one unacquainted with the use of the Stethoscope, to have pronounced him greatly better.

When pleuritis is complicated with pneumonia the latter disease is often much obscured; but of those cases where the pneumonia appears latent from its being masked by other affections of the thorax, the most frequent is that where it supervenes in cases of hypertrophy of the heart. In cases of this disease there is almost always some bronchitis, and very often an œdematous state of the pulmonary tissue. There are often wandering pains in the chest, and more or less difficulty of breathing. Now in such cases pneumonia may supervene without exciting any very remarkable exasperation of symptoms, as I have often seen. It is plain that without the Stethoscope we should be considerably at a loss in the treatment of the disease.

The occurrence of inflammation in one lung may be masked by its previous existence in the other. Thus we shall have cases of pneumonia of the right lung in which the disease may go on for some days, and be confined to that situation. When the opposite lung becomes engaged there is frequently no exasperation of symptoms, at least in the commencement of the new inflammation, or, in fact, at the very time when its detection is most important. Of this I have seen several cases, and it was only by the Stethoscope that I was enabled to detect the supervention of the new inflammation. Here I may make a remark. The decubitus on the affected side has been reckoned among the symptoms of pneumonia; it is a symptom not of much value, and rarely observed at the commencement of the disease; in cases of extensive hepatization we sometimes observe it. But what I wish to impress upon you is, that when we do observe it, its disappearance, or in other words, the ability of the patient to lie on the opposite side, is only to be reckoned as a favourable sign *in cases where the Stethoscope shows that this change is not brought about by the other lung becoming affected also.*

Other instances might be brought forward where the pneumonia is masked by different thoracic affections, but time will not permit us to enter into their consideration. In such cases the disease can hardly be called *latent*, for it presents some symptoms, the diagnostic value of which, however, is diminished by the presence of other diseases. But there is, as I have stated, such a disease as true latent pneumonia, where extensive inflammation of the lung will take place, either wholly without the symptoms which would lead to the belief that such a state of parts existed, or presenting external symptoms which only mislead the practitioner. The case which I have related is an instance of this; here the symptoms were abdominal, and the disease thoracic.

There are three cases where a latent pneumonia commonly supervenes: these are, continued fever, extensive erysipelatous inflammation, and small-pox, when it becomes confluent. In the late epidemic we had several cases of fever complicated with latent pneumonia, where there was no cough or pain of the chest, nor was the respiration more hurried than in common cases where the chest is not engaged. In these cases it is in vain to say, that by the external symptoms such a state of parts could be detected. On this point I shall quote from Laennec:— " In young " and robust subjects we may sometimes suspect the " supervention of pneumonia from a remarkable ex- " acerbation of the fever. In old men, on the con- " trary, in subjects exhausted by a long continued " and intense fever, and by abstinence, we observe a " sudden prostration of strength, accompanied by a " loss of intelligence; the skin becomes dry, the ex- " cretions fetid, the teeth and tongue are covered with " sordes, coma and the tracheal rale supervene, and " the patients begin to sink. These last symptoms " often accompany the commencement of pneumonia " in subjects exhausted by a severe chronic disease, " particularly if it be of cancerous."

Now here are a set of symptoms given by one of the most accurate observers of disease, and yet what is there in them that could lead to the suspicion of thoracic disease? Are not these the symptoms which occur in the latter stages of bad typhous fevers, when the exhibition of stimulants is called for? and yet such treatment in these cases would be calculated to increase the inflammation; the practice would be unpathological, and consequently improper. How then is the real state of parts to be detected? Is there any possibility of arriving at this knowledge by the study of these symptoms which we see occurring again and again in cases where there is no inflammation of the lung? The answers are obvious,—to cure our patient it is necessary to know the state of his lungs. This, as I have shown, *cannot* be known by external symptoms, and the Stethoscope is our only, but unerring guide.

When I come to speak of its application in fever, I shall recur to this subject, and allude to some cases of latent pneumonia which we have met with in this hospital: I shall also allude to latent catarrh.

Pleuritis often presents itself under obscure forms. The pain of the side, which is set down as one of the nosological symptoms, is often wanting, and it has been remarked, even so long a time ago as the period in which Stoll wrote, that many cases of pleuritis occur in which there is no pain of the side, and the other symptoms also are so insidious, as not to lead to a suspicion of the disease. The symptoms of hæmorrhagic pleuritis are generally not those which would lead to a suspicion of the disease. We are informed by Laennec, that in many cases their commencement is not accompanied by any of the symptoms of acute pleuritis, and the disease may be truly termed *latent.* There may in some cases be slight transitory pains, of which the patients hardly complain, with scarcely any cough, and but little dyspnœa. In others there may be great oppression and abundant expectoration; but these symptoms are more those of asthma and bronchitis than of pleurisy. Laennec further describes cases of hæmorrhagic pleurisy, in which there is actually nothing that could lead to a suspicion of the real seat of the disease. The patients are in a state of extreme languor and debility, accompanied by some indistinct febrile action; anorexia, and a cough so trifling, as not to excite the attention either of the physician or patient.

Such are the external symptoms of many cases of inflammation of the pleura: these cases may be considered as latent to him who neglects auscultation, but to the Stethoscopist there is no obscurity.

The fact then, Gentlemen, that several of the most important diseases of the chest occur, and cause extensive ravages, without exciting such external symptoms as will lead to their diagnosis, is in itself a sufficient argument for the practical utility of the Stethoscope, to every unprejudiced mind; an argument so strong and so convincing, that I think it unnecessary to press it further.

FEVER.

I have now to speak of the application of the Stethoscope in the treatment of fever. This is a branch of medical practice which has of late years undergone the most important improvements. In the treatment of fever the pathological state of the different organs of the body is now taken into consideration. The connexion of this state with the symptoms present is considered, and we do not now irritate the patient with stimulating cathartics when he is labouring under inflammation of the mucous membrane of the intestines, or make him drunk with wine when he is affected with encephalitis. The old routine practice is fast giving way before the lights of pathological anatomy; and the physician, before he prescribes for a fever patient, endeavours to ascertain the state of all the internal viscera.

These observations bring me to speak of the thoracic affections which so commonly occur in fever. In this terrible disease, or rather assemblage of diseases, the sensibility of the nervous system is often greatly reduced, and hence we might expect that many internal inflammations would occur under the latent form. Such as we have seen is the fact. The two most common of the thoracic affections which thus supervene, are latent pneumonia, and latent catarrh.

Of both these diseases we had numerous examples during the pressure of the late epidemic. I have the notes of one case, where in a debilitated woman at an advanced stage of fever, we discovered hepatization of the lower lobe of the right lung, and inflammation in the first degree of its remaining portions. During her fever she had no symptom that could lead us to suspect such a state of parts, and at the time that we first made the Stethoscopic examination, our reason for so doing was merely a curiosity to ascertain the state of the lung in advanced stages of fever. She then laboured under symptoms which in other cases would warrant the exhibition of wine and stimulants; but the knowledge obtained by the Stethoscope made us order bleeding, and the use of the tartar emetic in large doses. In the whole course of my practice in the fever wards, I never saw such a sudden and marked improvement as followed this treatment: the pulse from being weak and irregular, became regular and of a good strength. The woman, who was lying almost in a state of insensibility, accompanied by great prostration of strength, was next day able to sit up in the bed without assistance: her countenance was cheerful, and she expressed the greatest relief. The Stethoscope also showed that a corresponding improvement had taken place in the lung, and she recovered perfectly and with rapidity.

Who will deny that the life of this patient was saved by the use of the Stethoscope? She was sinking rapidly at the time that her plan of treatment was changed. The disease had already gone on to extensive disorganization of the lung; and when we consider the powers of her system, it is impossible to suppose but that it must soon have proved fatal.

Such instances of latent pneumonia are by no means so unfrequent as might be supposed. We had another patient in whom the entire of the left lung passed into hepatization, and continued so for weeks after his apparent recovery from fever. This man had no cough, no pain of the side, no symptom indeed at all remarkable, but an extraordinary frequency of the pulse.

In the fourth volume of the Transactions of the Association of the King and Queen's College of Physicians, my friend Dr. Townsend has related a case very similar to that of the woman which I have just mentioned. In this case the symptoms were those of low adynamic fever, yet the Stethoscope showed extensive latent pneumonia, which was treated in the same manner as in our case, and with the same success.

I shall conclude these observations on latent pneumonia, by quoting from our Clinical Report of this Hospital some observations on a case of pneumonia; the case is that of Eliza Hynes, page 24.

" It is very important to bear in mind, that in pulmonary inflammations, even when violent, the pulse is often soft and weak, and the skin not very hot, or even colder than natural. The pulse and skin do not in this instance, constantly, or even generally, indicate the real degree of inflammation, and consequently often mislead the practitioner. This observation applies not only to the lungs, but to intense inflammations of the bowels and brain. Irregularity, combined with weakness of the pulse, is not unfrequent in pneumonia, and may, perhaps, depend on obstruction to the pulmonary circulation, produced by the inflammation. We have often observed a weak pulse coinciding with a very strong action of the heart, and J. P. Frank observes: " Cordis interim, " sub quovis arteriarum statu vibratio magna." The same author makes the following important remark: " Sæpe in pneumoniæ augmento, sub pulsu minori " et contracto, sub facie pallida, extremitatibus per- " frigidis, ac apparente summa ægrotantis debilitate " magis quam sub contrariis rerum conditionibus, re- " petitâ celerique venesectione indigemus." Under such critical circumstances, when the life of our patient depends on our opinion concerning the state of his lungs, of what value is the Stethoscope. By its application our doubts are at once dissipated, and we can immediately ascertain whether we ought to resort to venesection and other antiphlogistic means." —*Clinical Report of the Meath Hospital, by Drs. Graves and Stokes*, pp. 25, 26.

Latent catarrh, or inflammation of the bronchial mucous membrane, is a common accompaniment of continued fever. Of this our cases have been exceedingly numerous: in general this catarrh is slight, but in some cases it is so severe as, if not checked, to produce death from suffocation. Of this I saw one melancholy instance, in a fine young man who was brought into hospital, labouring under the usual symptoms of severe typhous fever. I saw him in the evening, and at that time his respiration was not hurried, nor did he complain of any thoracic oppression. I inquired whether he had coughed since his admission, but was answered in the negative. Next morning I observed a certain degree of lividity of the face, but as he was then in a copious perspiration, I did not wish to strip the chest in order to make a Stethoscopic examination. The perspiration I hoped would prove critical. I saw him again in the evening, but found his symptoms unrelieved. I now applied the Stethoscope, and found a general and intense bronchitis. There was not a single portion of the chest in which the rale pathognomonic of this disease could not be heard. The chest sounded clear on percussion. I immediately ordered a venesection, and the use of the tartar emetic. Next day he was much better, and the Stethoscope showed that the bronchitis was greatly diminished. But an exacerbation came on towards evening; the tracheal rale supervened, and he died next morning. On dissection I found every bronchial ramification obstructed by adhesive mucus, and the lining membrane inflamed to the highest degree. This then was a case of severe latent bronchitis, and I have little doubt, that had the disease been discovered earlier, the life of the patient would have been saved.

On the subject of the utility of auscultation in fever, more might be said; but I shall refrain from doing so, as we have other topics to handle. Let us now consider its application in some of those diseases of the thoracic viscera, generally considered as incurable.

The first of these in frequency and interest is phthisis, or that disease which consists in the development of what are termed tubercles in the lung.

With the general history and pathology of this affection you are acquainted, so that I do not think it necessary to enter into the subject at present. I regret to say that as far as a cure is concerned, the Stethoscope has as yet been of but little utility. But I may here remark upon an objection which has been raised to its use, namely, that because the disease is incurable, the Stethoscopic examination is useless! Now in the first place, the disease is not in every instance incurable; and in the second, even supposing that it was incurable, it surely does not follow that we are to neglect one of the best means of ascertaining its nature. This would be, indeed, to establish a principle contrary to every thing that is enlightened in the study of medicine, for the incurability of a disease should be our chief stimulus to study its nature.

It is now proved that this disease proceeds by successive eruptions, or crops of tubercles, which, in the great majority of cases, commence at the superior portion of the lung, and proceed downwards; and further, that the chance of recovery is inversely as the extent of the lung affected. Hence it is obvious, that if there exist a chance of the cure of a patient thus affected, this will mainly depend on our being able to recognize the disease in its very first commencement. Now I will take upon myself to say, that this can be done with certainty by the Stethoscope alone, for this plain reason, that the external symptoms of the first stage are those of common catarrh; it is not until the disease has gone on to the second stage that those symptoms, generally considered as indicative of phthisis, begin to manifest themselves; and even here there is room for doubt, when the Stethoscope is not employed; for some cases of chronic bronchitis will present the very same set of symptoms, such as the purulent expectoration and hectic.

The propositions may be thus stated :—

1st. In the great majority of cases the primary symptoms of phthisis and of catarrh are the same, but the Stethoscopic indications are different.

2nd. In some cases of chronic bronchitis the symptoms are the same as those of advanced phthisis, but the Stethoscopic indications are different.

Hence it is obvious that both in the primary and secondary stages of phthisis, a Stethoscopic examination is necessary for an accurate diagnosis.

Whether inflammation of the lung be the cause of phthisis, or whether the tubercles act in producing inflammation, I shall not now inquire. Certain it is, that whether the inflammation be the cause or consequence of tubercle, it usually accompanies it, and greatly accelerates its progress. Hence, to reduce this inflammation should be the object of the physician, and it is obvious, that to be able to detect it in its first stage must be of the highest consequence. This, as I have shown, can only be done by the Stethoscope.

I have stated that true pulmonary inflammation is very liable to supervene in phthisis. This is sometimes latent, at others it is accompanied with violent symptoms. In the first case the necessity of Stethoscopic examination is obvious; in the second it presents all the advantages which I have shown to result from its use in common pneumonia.

It is by the combination of the lights given by mediate auscultation and the study of pathological anatomy, that a fact, with respect to this disease, has been established; a fact, the truth of which is now ascertained beyond any question. I allude to the possibility of a cure in phthisis, even after abscesses have been formed in the lung. This is known first by the Stethoscope. We shall have a patient presenting all the external symptoms and Stethoscopic phenomena of phthisis.—We shall trace it from the first stage to the formation of an abscess in the superior portion of the lung, as indicated by all the Stethoscopic signs of this state. Nevertheless, we shall find this patient to recover gradually, and the Stethoscope will show that one of two methods of cure has been adopted by nature; the phenomena of the cavity will either wholly disappear, as would take place in the case of cicatrization, by adhesion of its parietes, or they will continue and remain so during the life of the patient, as if the cavity still remained, but that the ulcerative process had been checked.

Now by the study of pathological anatomy we find that we are completely borne out in these ideas; we find that nature employs two methods of cure in phthisis,—first, cicatrization, by adhesion of the parietes of the abscess, in which case the Stethoscopic phenomena of a cavity disappear; and secondly, by throwing a semi-cartilaginous lining around the cavity, which then remains, without increasing, during the life of the patient. This is the case where the Stethoscope shows the continuance of the cavity.

Thus the curability of phthisis is proved by observation during life, and by the examination of bodies after death. These are the true means of establishing any pathological fact. But the observation during life can only be made by the Stethoscope, for external symptoms will not suffice, by them alone we cannot know with certainty when a cavity is formed. Hence we owe to the study of the Stethoscope this all-important practical information, that some cases of phthisis *may be cured.*

It sometimes happens, that from the suppuration of a mass of tubercles at the surface of the lung, the serous membrane is destroyed, a fistulous opening is formed, passing from the phthisical excavation into the bag of the pleura. Through this opening the contents of the abscess pass into the pleura, there excite inflammation, and produce empyema, while the air, coming directly from the bronchial tubes, also passes in, and produces the complication of empyema with pneumothorax. This accident may occur without causing any remarkable aggravation of symptoms; of this there are several cases on record. In others, on the contrary, as in the case which we had last summer in our wards, it may be accompanied by the most violent symptoms. In either case the state of parts is at once discoverable by the Stethoscope.

Even in the advanced stages of phthisis we sometimes find that the symptoms are not sufficient to reveal the disease. We have had several cases in this hospital where there was no puriform expectoration, although the Stethoscope proved the existence of extensive tuberculous cavities in the lung, the formation of which we had traced from the very commencement. We have seen other cases of the same kind without hectic, for a greater or lesser space of time. These circumstances make us necessarily doubt the value of some of the most important external symptoms of phthisis.

Before leaving the subject I shall say a few words on the application of the Stethoscope in those melancholy cases which, from the extent of the disease, do not admit of a cure. Is it of no consequence to the patient, that, having ascertained this to be the fact, we refrain from exposing him to the torture of unavailing remedies? Is it of no consequence to the feelings of his friends, that they should not deceive themselves with indulging in deceitful hopes? Is it of no consequence to the man possessed of a strong mind, anxious to know the real state of his case, that the truth should be told him? Put the case to your own hearts,—place yourselves in his situation, and I can anticipate your answer. There is another reason which should make us anxious to know the exact state of the case, even though such knowledge should lead to a fatal prognosis. How often do we hear of patients being torn from their friends, from all the comforts of home, and the consolations of sympathy, and sent to try the effects of a warm climate, at a time when a Stethoscopic examination would prove the utter hopelessness of their cases? How often do we hear of the death of such individuals immediately on their arrival at their destined place of exile,—sick, and alone,—strangers in a strange land, they sink without a friend to close their eyes,—the victims of false hope—of mental, as well as of bodily ills.

DISEASES OF THE HEART.

On the subject of diseases of the heart I shall be brief, as my principal object is to bring forward evidence in favour of the utility of the Stethoscope in a practical point of view. To dilate on its importance in the diagnosis of those varied and terrible affections, is foreign to my present purpose. As in phthisis, the certainty of diagnosis in diseases of the heart has been considered by some as useless, because they are generally incurable! Such an opinion is hardly worth refuting. "If we are ignorant of diseases of the "heart," says Senac, "we shall pronounce rashly on "an infinite number of cases; we shall fatigue our "patients with hurtful or useless remedies; we shall "hasten death by treating some diseases like those "which are of a totally different nature; we shall be "exposed to shameful discoveries by the opening of "bodies. Finally, danger will be at hand when we "think it at a distance."

It is quite erroneous to say, that because a disease is incurable it is useless to detect its existence. How many diseases are there whose cure is beyond the power of art, and in which the duty of the physician is to alleviate suffering and prolong life; but to do so with any prospect of advantage, it is absolutely necessary that he should understand their nature.

With respect to diseases of the heart there are two important applications of the Stethoscope; first, as an assistant in their detection. One of the principal difficulties in this investigation is, that when the lungs are engaged, the action of the heart is often so much increased as completely to simulate disease. Hence it is obvious, that before we can make any diagnosis as to the existence of disease of the heart, the state of the lung must be known. This is only to be done with accuracy by the Stethoscope, for this reason, that if disease of the heart exists, it very often masks the symptoms of pulmonary affections, so as to make them undiscoverable by external symptoms alone.

2dly. In the treatment of diseases of the heart, particularly the different species of hypertrophy, the Stethoscope is of great utility in enabling us to ascertain the first appearance of pneumonia. This is an affection exceedingly common in cases where any obstruction exists in the heart. The lungs in such cases are in a state of congestion, and consequently very liable to repeated attacks of inflammation. It is of the greatest importance to the life of the patient, that these attacks should be detected in their commencement, and met by active antiphlogistic measures. Every one of these attacks increases the disease of the heart, by augmenting the pulmonary obstruction, and every addition to the hypertrophy increases the tendency to pulmonary disease, by augmenting the congested state of the lungs. Thus the two affections act in producing one another, until at length the patient is overwhelmed.

In these cases of hypertrophy of the heart there is always more or less oppression of the breathing, cough, and frequently pains of the chest. Under such circumstances how difficult must it be to recognize the accession of pulmonary inflammation by external symptoms alone?

Much more could be said on this head, but I shall reserve the subject until I come to describe the diseases of the heart particularly.

SURGICAL APPLICATIONS OF THE STETHOSCOPE.

In speaking of the surgical applications of the Stethoscope, I shall confine myself to the consideration of those cases in which the chest is directly or indirectly concerned. I shall allude to the operations for empyema, for the extraction of foreign bodies from the trachea, for caries of the rib; of its utility in detecting hæmorrhage into the pleura, in ascertaining the state of the lungs previous to the operations for cancer of the breast, white swelling, and fistula in ano. I shall show its utility in the treatment of wounds of the thorax, and lastly, speak of the importance of ascertaining the state of the lung after great operations.

The symptoms of empyema, though laid down in surgical books, are still admitted by the best informed authors to be obscure. In the constitutional symptoms there is nothing pathognomonic of the disease, and among those that are local there is not one which can be termed constant. Le Dran gives a case of aggravated empyema, where there was no symptom that could make him decide upon an operation. The patient died, and on dissection a large quantity of pus was found in the pleura. There are many of such cases on record. A symptom much relied on is the decubitus on the affected side; this, however, is a sign but of little value, it scarcely ever occurs in the commencement of the disease, and even after a considerable effusion has taken place it is frequently wanting, the patients, in the majority of cases, lying on the back. Instances are also on record where the decubitus was indifferent, although a copious effusion existed in the cavity of one pleura.

Dilatation of the affected side is another symptom much relied on by surgical writers. Now the fact is, that it is an inconstant and equivocal symptom; inconstant, as many cases occur without it; and equivocal, because it occurs in other diseases where the pleura is not engaged.

The following case would present some difficulty in diagnosis, were we to take the external symptoms solely for our guide. I saw a patient lately who had suffered from pleuritis of the right side, in consequence of which that side had become contracted. He was affected with cough, purulent expectoration, and hectic. He lay on the left side, which sounded dull on percussion, and to all appearance was enlarged. Yet this individual had not empyema, but was affected with phthisis of the left lung to a great extent.

Cases of empyema are on record where there was actually no external symptom indicative of this state of parts, where there was neither cough, expectoration, hectic, pain, decubitus on, or dilatation of the affected side, where there was no dyspnœa even after exertion; in fact no one external symptom that could lead even to a suspicion of the disease.

Of what importance must it be to the surgeon, to know with accuracy the exact state of the lungs previous to the operation for empyema. If he find tuberculous abscesses in the opposite lung, or ascertains that the diseased cavity communicates with the bronchial tubes by a fistulous opening, he will pause before he proceeds to the operation. Now in the great majority of cases, this knowledge is solely to be obtained by the Stethoscope, for how can we affirm, that a patient has not phthisis of the opposite lung, when he is labouring under hectic, cough, and purulent expectoration? Again, the external symptoms of a fistulous opening having occurred, are exceedingly equivocal. When the opening is small, the discharge of sero-purulent matter is so scanty, that it is highly difficult to recognize it in the expectoration. But it is stated, that a sudden and abundant discharge of purulent matter, is pathognomonic of this lesion: this is a mis-statement; a similar discharge will take place from other causes:—such as the softening of a tuberculous abscess, or suppuration of the liver through the lung by adhesion of the pleuræ; and there are cases on record, where it has occurred from the bronchial mucous membrane alone, in such quantity, as to threaten or induce suffocation. The Stethoscopic indications of the existence of the fistulous communication, are constant and remarkably distinct.

We had lately a case in this hospital highly illustrative of a surgical application of the Stethoscope. I allude to that of the child who suffered from the introduction of a plum-stone into the trachea, and upon whom the operation of tracheotomy was performed by Mr. Mac Namara. In this case, we found upon our first Stethoscopic examination, that the respiration could not be heard over the right lung, but that it was louder than natural in the left. The right side of the chest sounded clear on percussion. From these observations, Mr. Mac Namara and I concluded, that the foreign body was impacted in the right bronchus. Upon making the child cough, we found that the respiration became suddenly audible, and at the same time we could hear the foreign body distinctly moving in the trachea. You remember the brilliant success of the operation, which was performed with greater confidence on account of the Stethoscopic examination.

A case sometimes occurs where a Stethoscopic examination is of importance in a surgical point of view. In wounds of the thorax, the patients will become pale, have a tendency to syncope, and present a weak and fluttering pulse, all indicative of hæmorrhage into the pleura. The Stethoscope sets the matter at rest, if it detects hæmorrhage, or shows, as I have seen, that such is not the case, the information is equally valuable.

In the treatment of penetrating wounds of the thorax, the advantage of being able to determine the state of the lung from time to time, is so obvious that I shall not dwell upon it. But the best application of the Stethoscope in the hands of the surgical practitioner, is to enable him to determine the state of the lung previous to the operations for cancer of the breast, caries of the ribs, white swelling, and fistula in ano. The question is of great importance, particularly as in the two first cases it is extremely difficult to determine as to the state of the lung from external symptoms. Any long continued irritation on the parietes of the chest will cause cough, and in both these affections hectic will supervene.

In a paper lately published by Velpeau, you will see some most interesting observations on latent diseases of the lung, following the great operations. Here the utility of the Stethoscope is manifest.

I have now, Gentlemen, given you a brief and hasty sketch of the practical utility of the Stethoscope. I have touched only on the principal parts of the inquiry, and have handled them, perhaps, in too superficial a manner. But the time allotted for this course is so limited, that I could not detain you longer on the subject. In the course of the ensuing lectures which I propose to deliver, you shall have many other instances of its utility laid before you. I hope I have convinced you that it is an instrument of the very highest importance, calculated eminently to improve our knowledge, and of course our treatment of thoracic disease. An instrument, not as some represent it, the bagatelle of a day, the brain-born fancy of some speculative enthusiast, the use of which, like the universal medicine, or the animal magnetism, will be soon forgotten, or remembered only to be ridiculed. No, Gentlemen, we have seen that it has for its foundation the immutable laws of physical phenomena; that, like the other discoveries founded on such a basis, it is simple in its application, and easily understood. It is one of those rich and splendid gifts, which Science now and then bestows upon her most favoured votaries, which, while they extend our views, and open to us wide and fruitful fields of inquiry, confer in the meantime the richest benefits and blessings on mankind. This instrument was first introduced by one, whose works will ever remain as an example of patient investigation, philosophical research, and brilliant discovery, and its use is now supported by the liberal, the enlightened, and the scientific portion of the medical world.

Gentlemen, my colleague and I reflect with pride and pleasure, that in this hospital the Stethoscope was first taught in Dublin. In our wards we have diligently used it, not after the manner of empirics, to the exclusion of every other method of inquiry; but as a powerful assistant in our diagnosis of disease. From these wards we have sent many accomplished Stethoscopists, and we should wish you all to become the same. It is not now that you will feel the advantages of the study. All that you can now receive is the exalted pleasure which arises from the acquisition of knowledge; but hereafter, when you come to undertake the duties of your profession, you will find that this information will be of paramount importance, and will raise you in the esteem of your patients, and the opinion of society at large.

THE END.